Basic Statistics

Educational subject description sheet

Basic information

Field of study Joint Bachelor in Sustainability	**Education cycle** 2025/26
Speciality -	**Subject code** UJ.WPAJBSS.810.16343.25
Organizational unit Faculty of Law and Administration	**Lecture languages** english
Study level first cycle (joint degree programme)	**Subject related to scientific research** Yes
Study form full-time degree programme	**Disciplines** Maths
Education profile General academic	**ISCED classification** 0542 Statistics
Mandatory obligatory	**USOS code**

Subject coordinator	Piotr Szwedo
Lecturer	Ian MacGregor-Fors, Tareq Hussein, Martha Zaidan

Period Semester 1	**Examination** graded credit **Activities and hours** Workshop: 14 E-learning (lecture): 8, including: • Asynchronous classes: 8 Lecture: 8	**Number of ECTS points** 4.0

Goals

C1	This course is designed to offer a comprehensive introduction to the fundamentals of statistics and statistical analysis. Covered topics include descriptive statistics, probability theory, and various tests for analyzing relationships and differences. The primary objective is to equip students with basic statistical tools that will enhance their proficiency in sustainability studies within the BASUS program, including advanced statistics courses, as well as others that require statistics as a tool.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the difference between short-term variability and long-term stability (law of large numbers)	JBS_K1_W07	written credit, credit with grade
W2	how statistics can be used as a tool in sustainability sciences	JBS_K1_W06, JBS_K1_W07	written credit, credit with grade
Skills – Student can:			
U1	describe a group of numbers statistically (central tendency, dispersion)	JBS_K1_U03	written credit, credit with grade
U2	analyze probability situations and predict the likelihood of experiment outcomes	JBS_K1_U03	written credit, credit with grade
U3	apply relation tests and interpret the resulting output	JBS_K1_U03	written credit, credit with grade
U4	apply and interpret the t-test for different groups of variables	JBS_K1_U03	written credit, credit with grade
U5	apply and interpret the results from ANOVA output	JBS_K1_U03	written credit, credit with grade
Social competences – Student is ready for:			
K1	defend the importance of scientific data through basic statistics as a basis for decision-making	JBS_K1_K05	written credit, credit with grade

Calculation of ECTS points

Activity form	Activity hours*
Workshop	14
preparation for classes	20
exercises performance	20
preparation for final test	42
E-learning (lecture)	8
Lecture	8

Student workload	Hours 112	ECTS 4.0

* hour means 45 minutes

Study content

No.	Course content	Subject's learning outcomes
1.	Introduction to the scientific method, research questions & hypotheses	W1, W2
2.	Introduction to statistics & Descriptive statistics (central tendency, dispersion)	W1, W2, U1
3.	Probability	W2, U2
4.	Relation tests (correlation/regression) theory and example	W2, U3
5.	Difference tests (t-test) theory and examples	W2, U4
6.	Difference tests (Anova) theory and examples	W2, U5
7.	Online real-time discussion session with teachers related to the covered course topics	W1, W2, K1

Course advanced

Teaching methods :

conversation lecture, discussion, solving tasks, e-learning methods, practicals

Activities	Examination methods	Credit conditions
Workshop	written credit, credit with grade	The final exam counts 60% towards the final grade. Students need to get at least 50% of points in order to pass the exam. Points obtained from exercises done throughout the course count 40% towards the final grade. Students can pass the course without having completed the exercises, but they need to at a minimum have gathered a total of 50% of points.
E-learning (lecture)	written credit, credit with grade	The final exam counts 60% towards the final grade. Students need to get at least 50% of points in order to pass the exam. Points obtained from exercises done throughout the course count 40% towards the final grade. Students can pass the course without having completed the exercises, but they need to at a minimum have gathered a total of 50% of points.
Lecture	written credit, credit with grade	The final exam counts 60% towards the final grade. Students need to get at least 50% of points in order to pass the exam. Points obtained from exercises done throughout the course count 40% towards the final grade. Students can pass the course without having completed the exercises, but they need to at a minimum have gathered a total of 50% of points.

Entry requirements

None

Literature

Obligatory

1. For example, Mohanty PK, Patel SK (2019) Basic Statistics, 2nd ed. Scientific Publishers, 449p.

Effects

Code	Content
JBS_K1_K05	The graduate can defend the importance of scientific data and methods as a basis for decision-making.
JBS_K1_U03	The graduate can apply adequate methods and tools, including selected IT tools, to solve problems related to data collection, analysis, and management in the context of sustainability.
JBS_K1_W06	The graduate can describe interconnections between various aspects of sustainability and identify their significance in the context of natural and social sciences, with a special focus on disciplines included in the selected specialisation track (law and politics; chemistry and physics; chemistry and biology; economics and geography; economics, management and engineering; humanities).
JBS_K1_W07	The graduate can apply the theory and methodology of disciplines included in the selected specialisation track to sustainability-related problems, taking into consideration practical limitations such as protection of intellectual property.